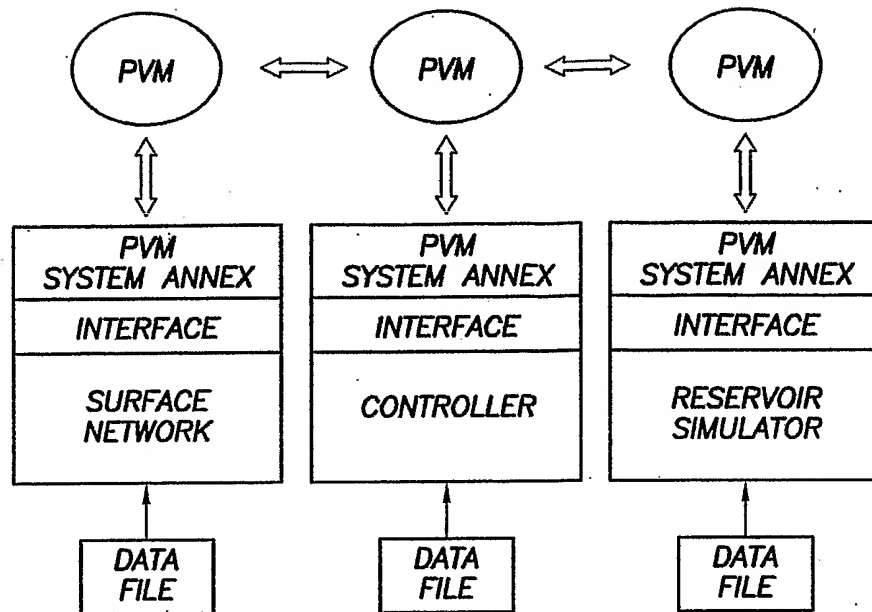
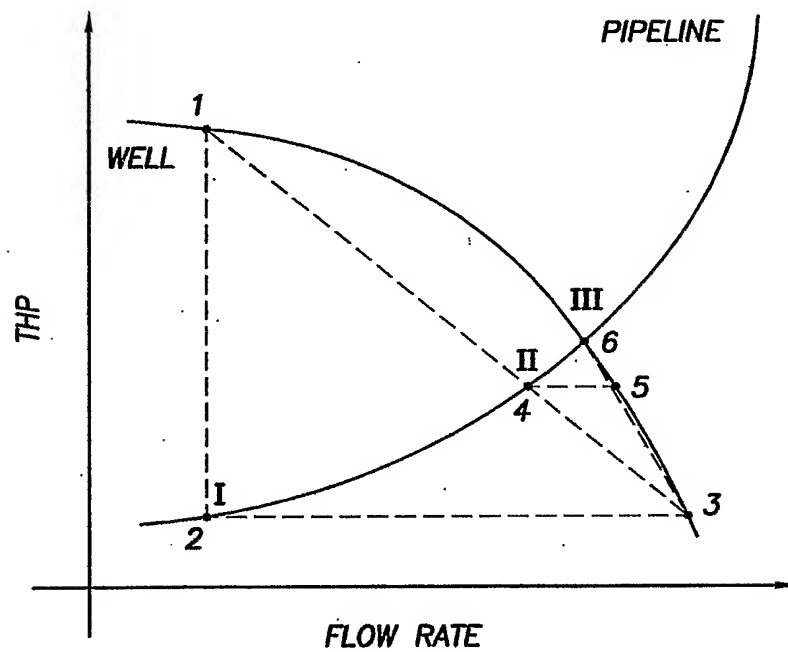


1/12

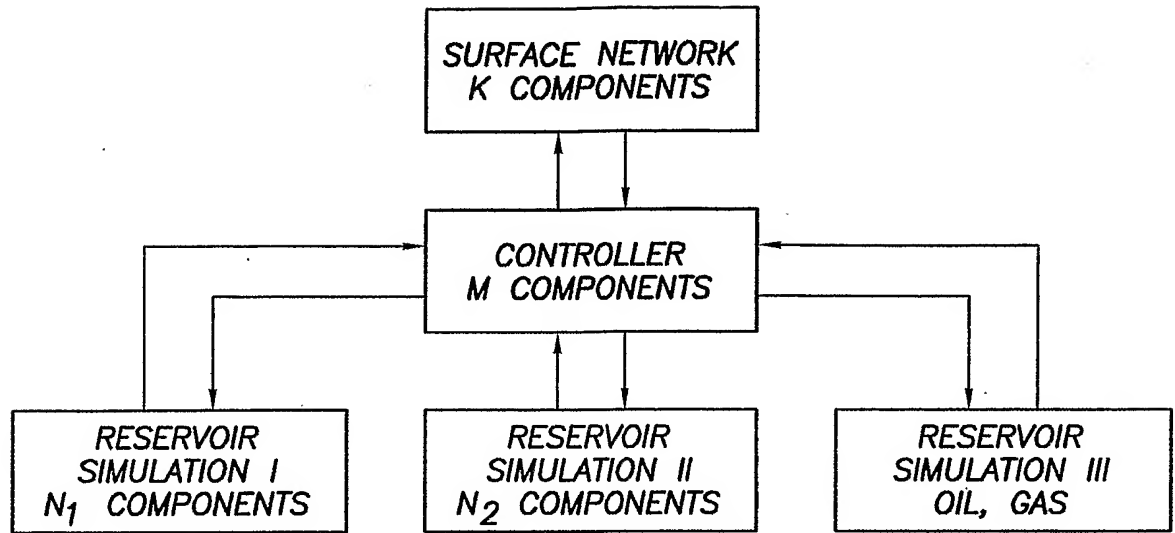


**FIG.1**—ARCHITECTURE OF THE COUPLED RESERVOIR/  
NETWORK SYSTEM.



**FIG.2**—BALANCING A PRODUCTION WELL AND A NETWORK  
PIPELINE.

2/12

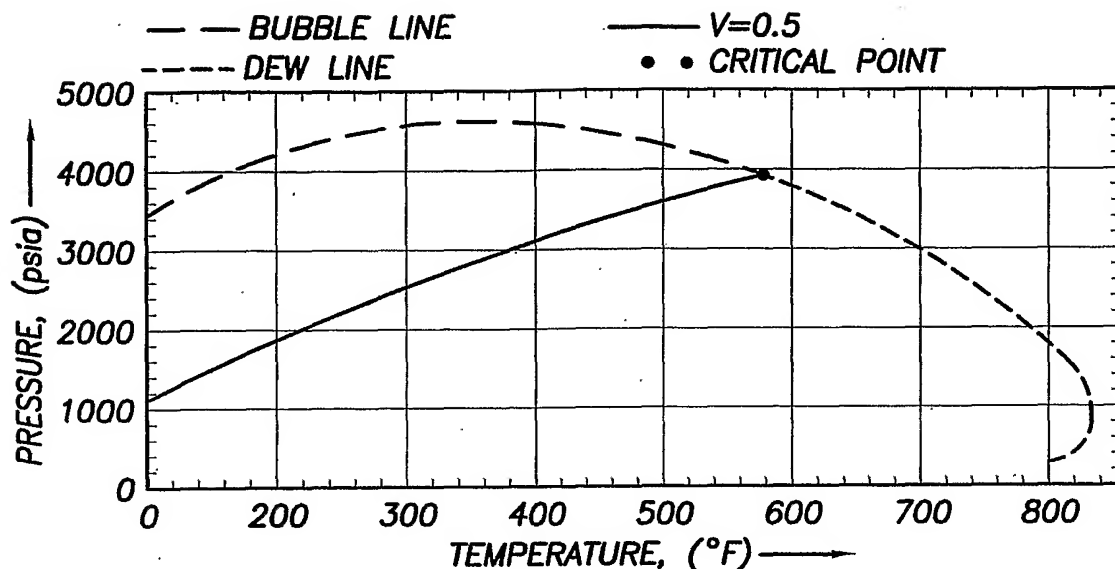


**FIG.3** –PSEUDO–COMPONENT SETS IN A COUPLED SIMULATION.

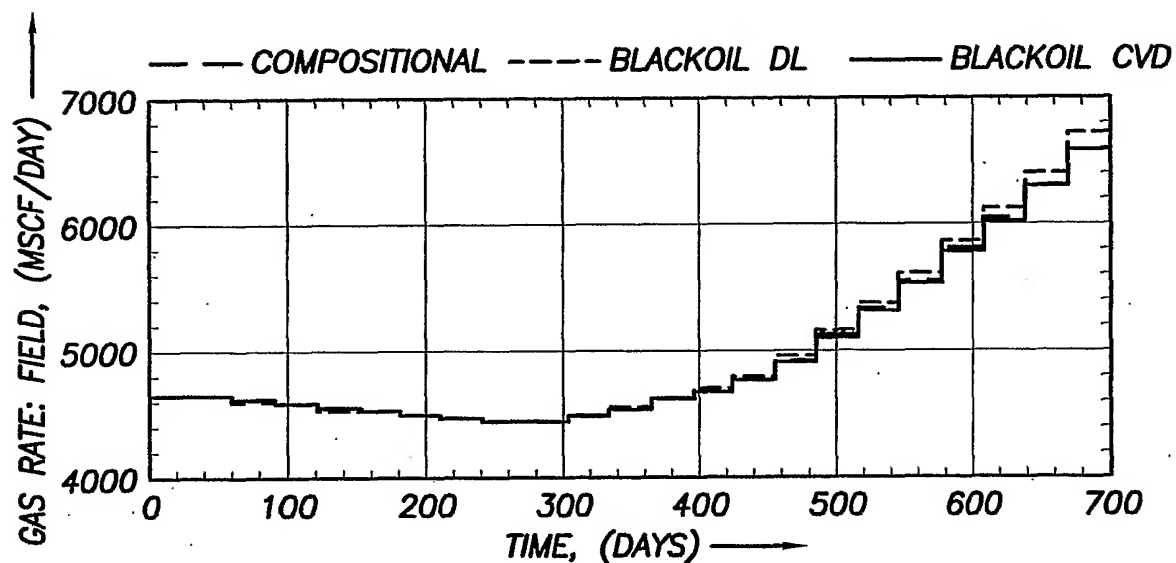
COMPONENTS/ PSEUDO–COMPONENTS	MOLE FRACTION
$N_2$	0.0069
$CO_2$	0.0069
$C_1$	0.5280
$C_2-C_3$	0.1515
$C_4-C_6$	0.0703
$C_8$	0.0867
HC13	0.0529
HC18	0.0340
HC26	0.0238
HC43	0.0145

**TABLE 1** –INITIAL COMPOSITION IN THE ENTIRE RESERVOIR.

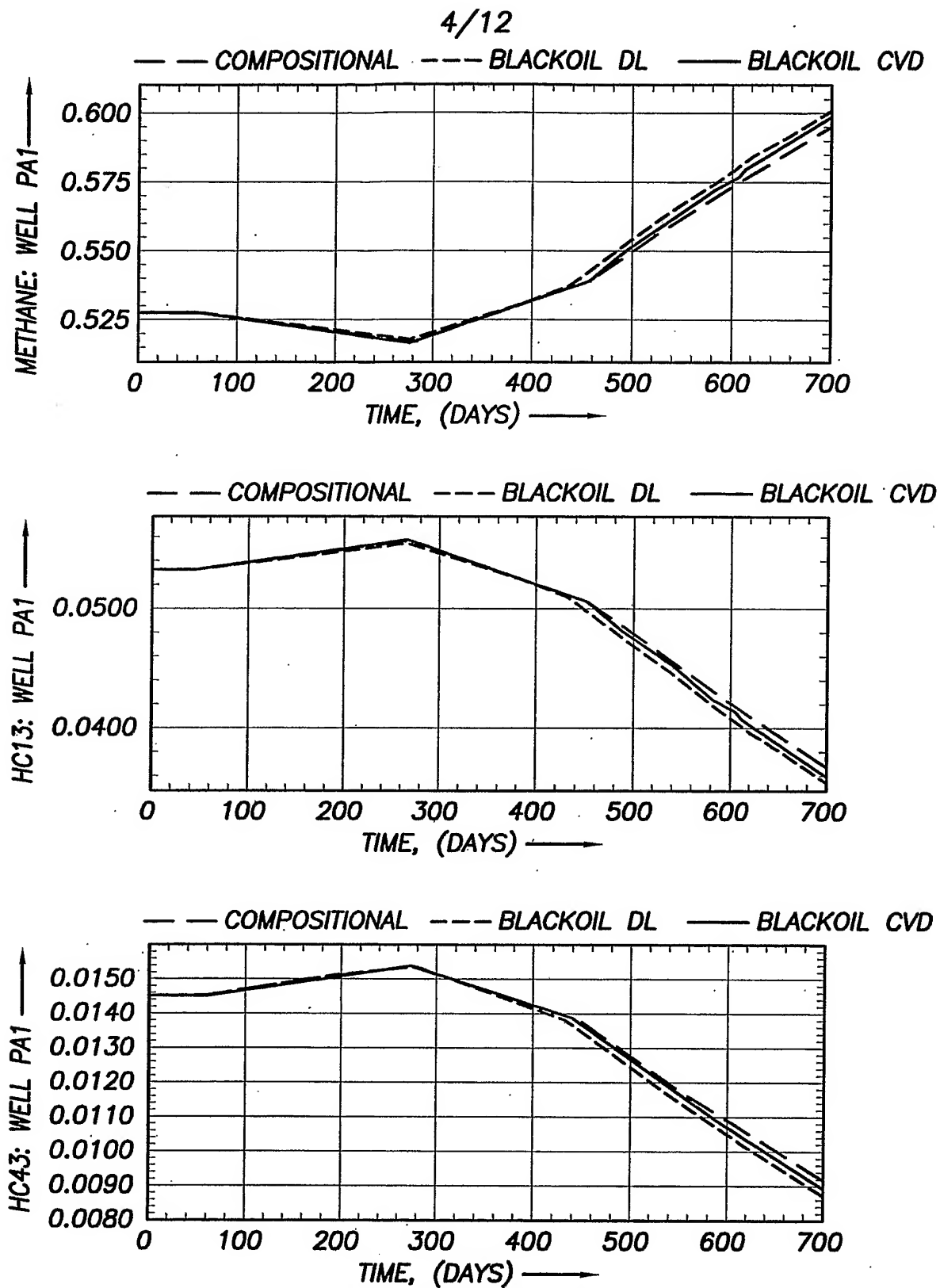
3/12



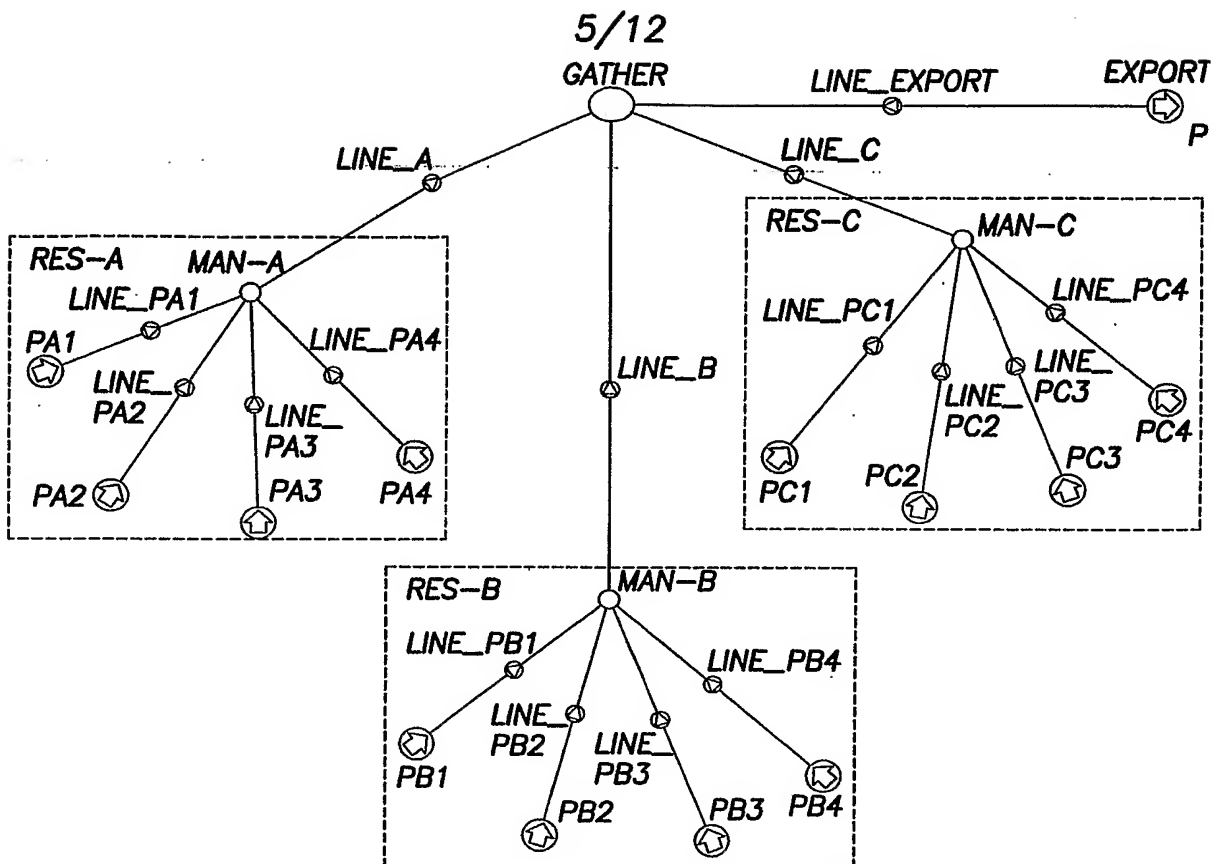
**FIG.4** —PHASE PLOT FOR THE PVT SAMPLE USED IN THE BLACK OIL DELUMPING VALIDATION EXAMPLE. RESERVOIR TEMPERATURE=284 °F. INITIAL PRESSURE AT THE TOP OF THE RESERVOIR=4600 psi.



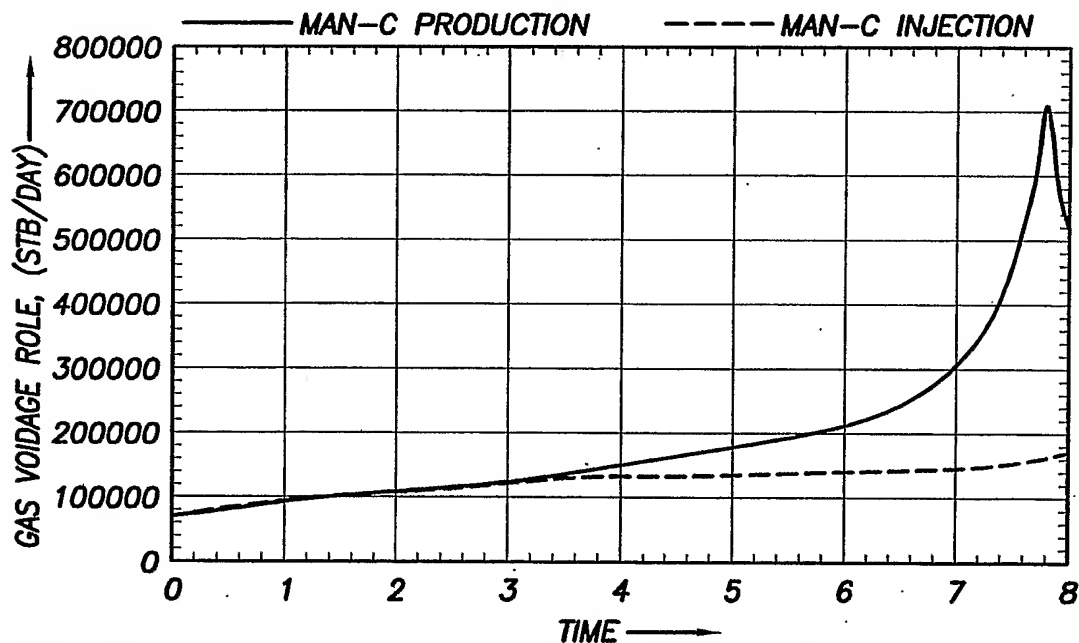
**FIG.5** —FIELD GAS PRODUCTION RATE



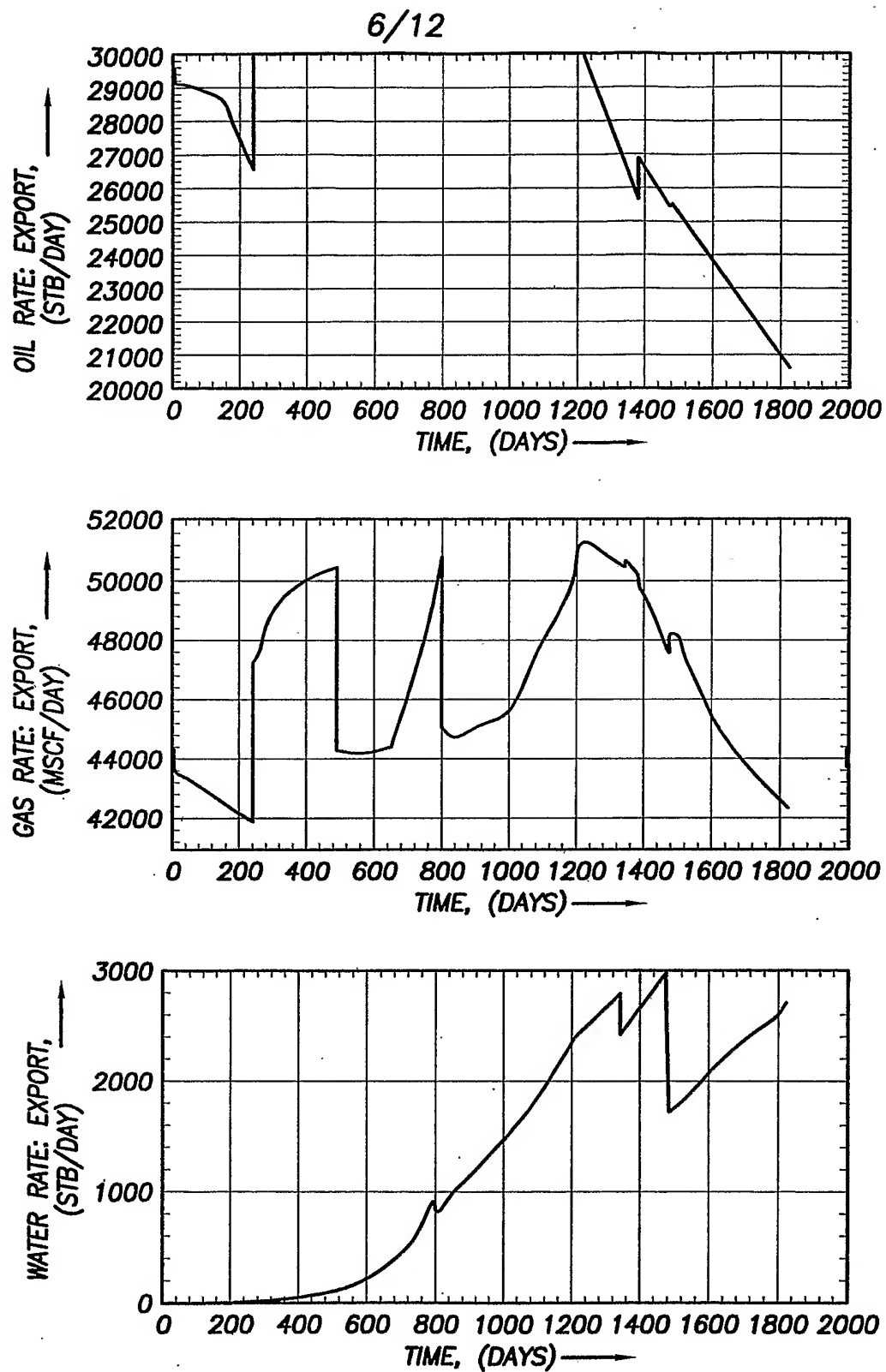
**FIG.6** — MOLE FRACTION OF METHANE AND THE HC13 AND HC43  
PSEUDO-COMPONENTS' MOLE FRACTION VS. TIME FOR WELL PA1



**FIG.7**—SKETCH OF THE SURFACE NETWORK USED IN EXAMPLE 1.

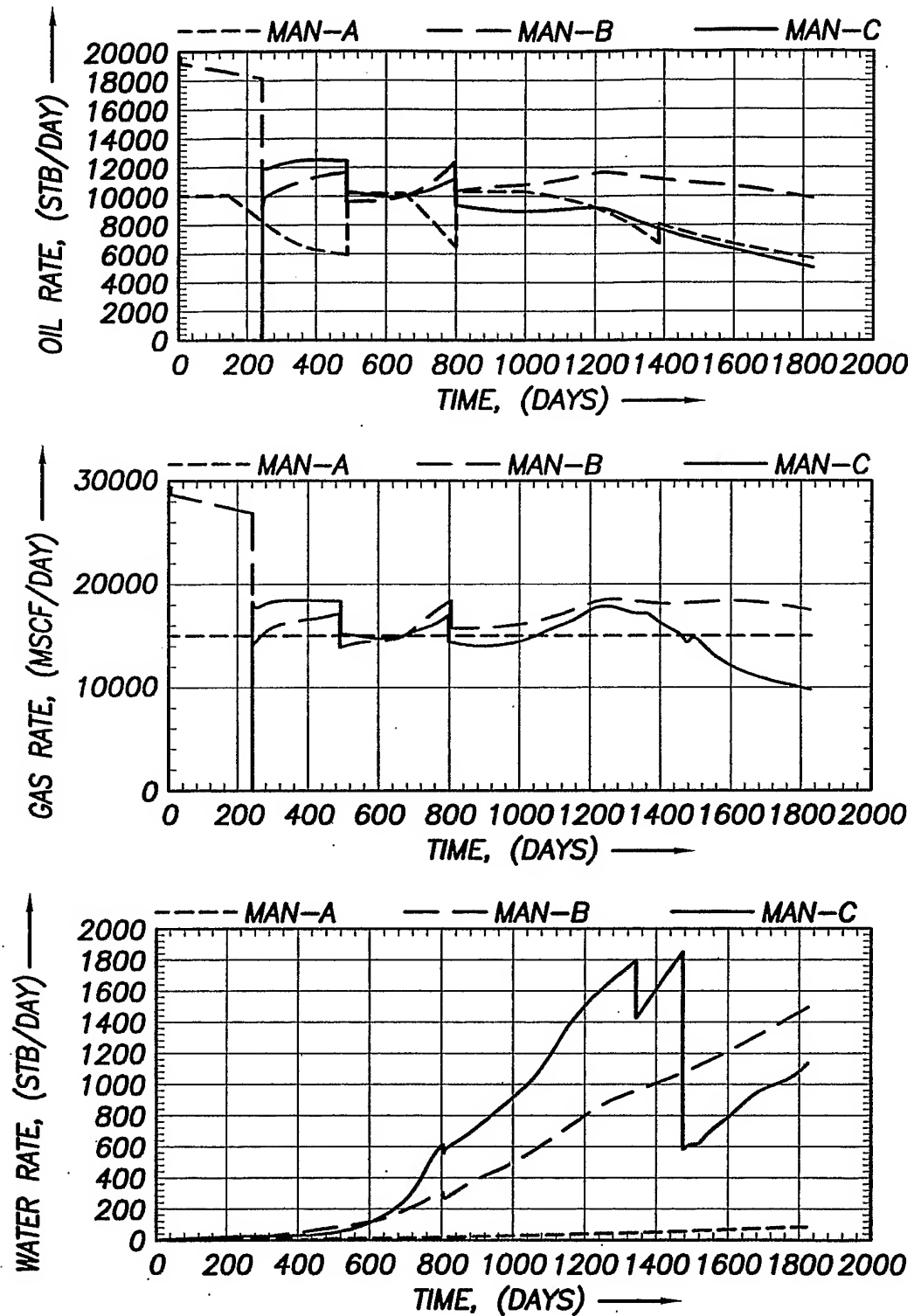


**FIG.14**—MAN-C RESERVOIR VOLUME PRODUCTION RATE AND RESERVOIR VOLUME GAS INJECTION RATE VS. TIME; EXAMPLE II



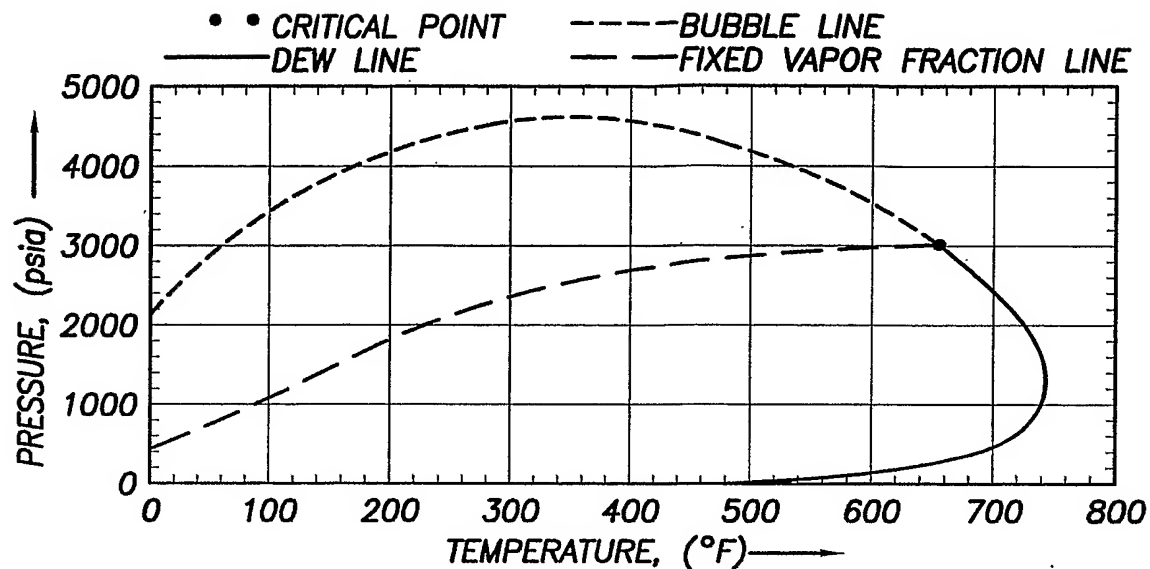
**FIG.8** -OIL, GAS AND WATER PRODUCTION RATE VS. TIME AT THE EXPORT NODE; EXAMPLE I

7/12

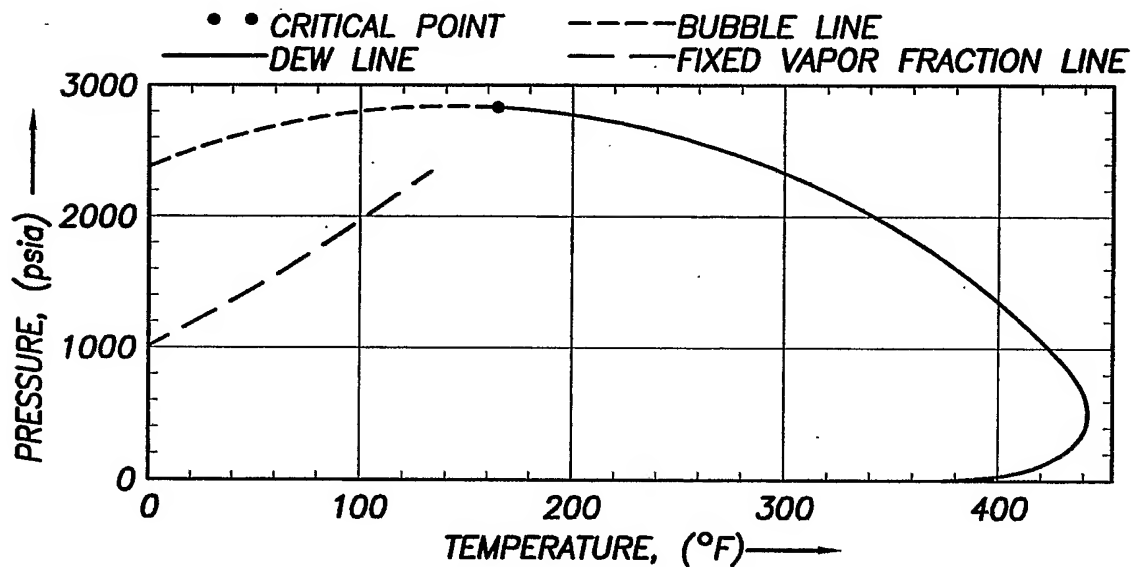


**FIG.9** –OIL, GAS AND WATER PRODUCTION RATE VS. TIME FOR THE THREE COUPLED RESERVOIRS; EXAMPLE I.

8/12



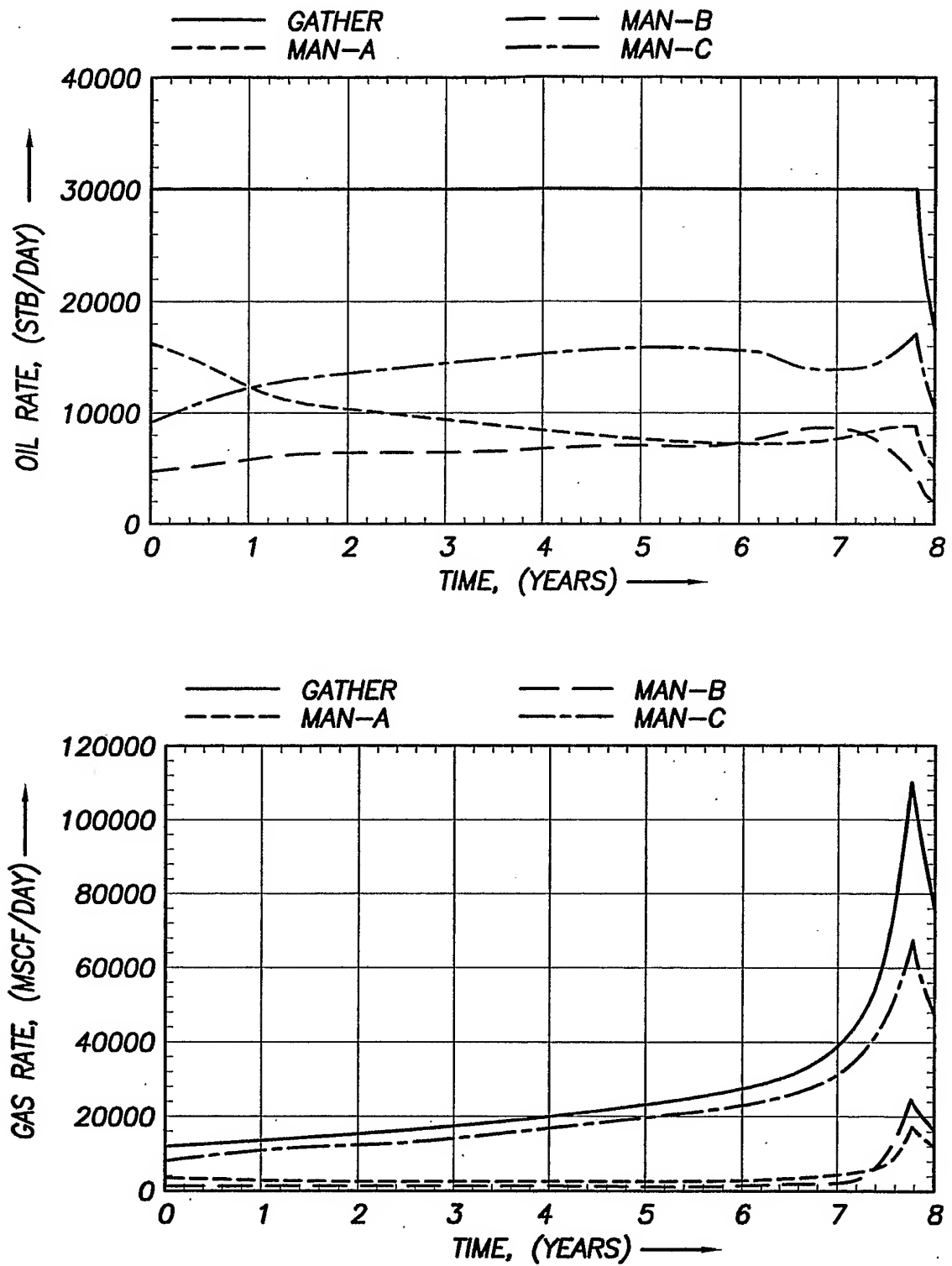
**FIG. 10** —PHASE PLOT FOR THE PVT SAMPLES USED IN RESERVOIR B, EXAMPLE II. RESERVOIR TEMPERATURE=284°F. INITIAL PRESSURE AT THE TOP OF THE RESERVOIR=4600 psi.



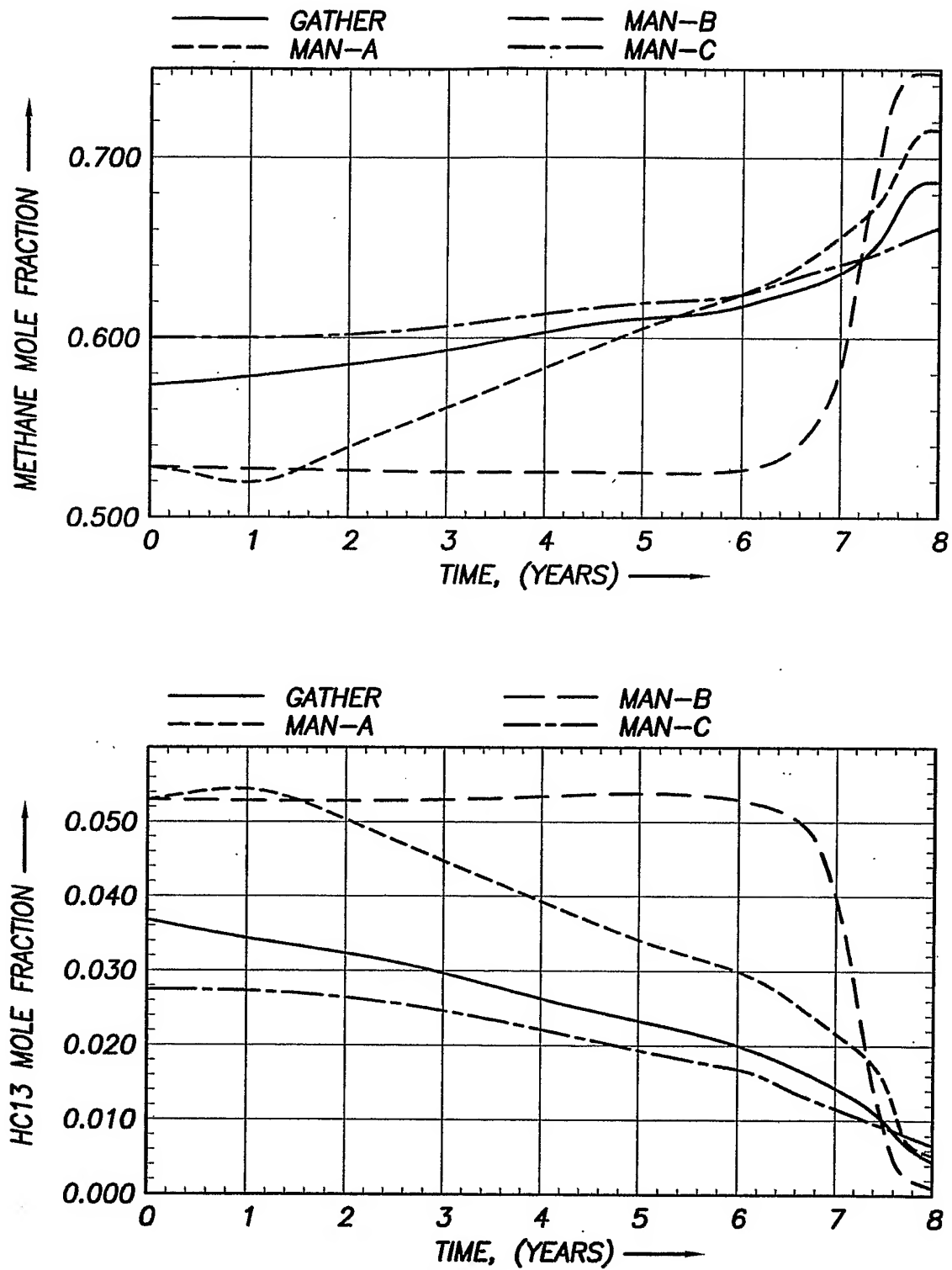
**FIG. 11** —PHASE PLOT FOR THE PVT SAMPLES USED IN RESERVOIR C, EXAMPLE II. RESERVOIR TEMPERATURE=200°F. INITIAL PRESSURE AT THE TOP OF THE RESERVOIR=3000 psi.



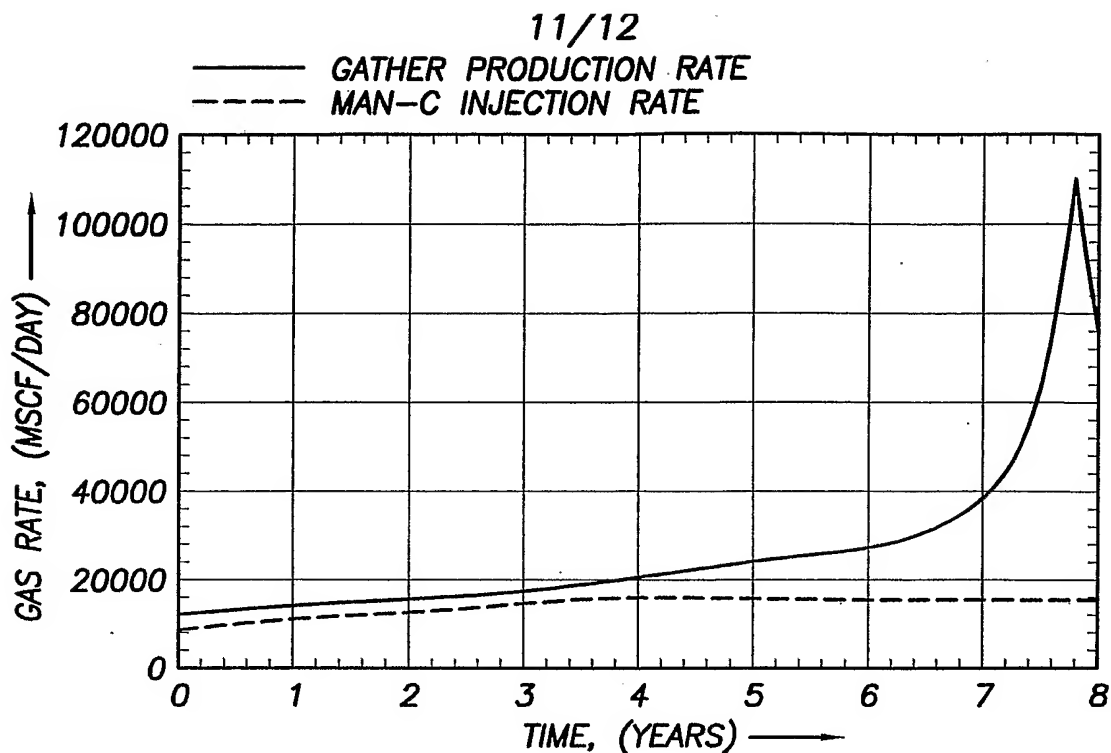
9/12

**FIG.12**—OIL AND GAS PRODUCTION RATE VS. TIME; EXAMPLE II.

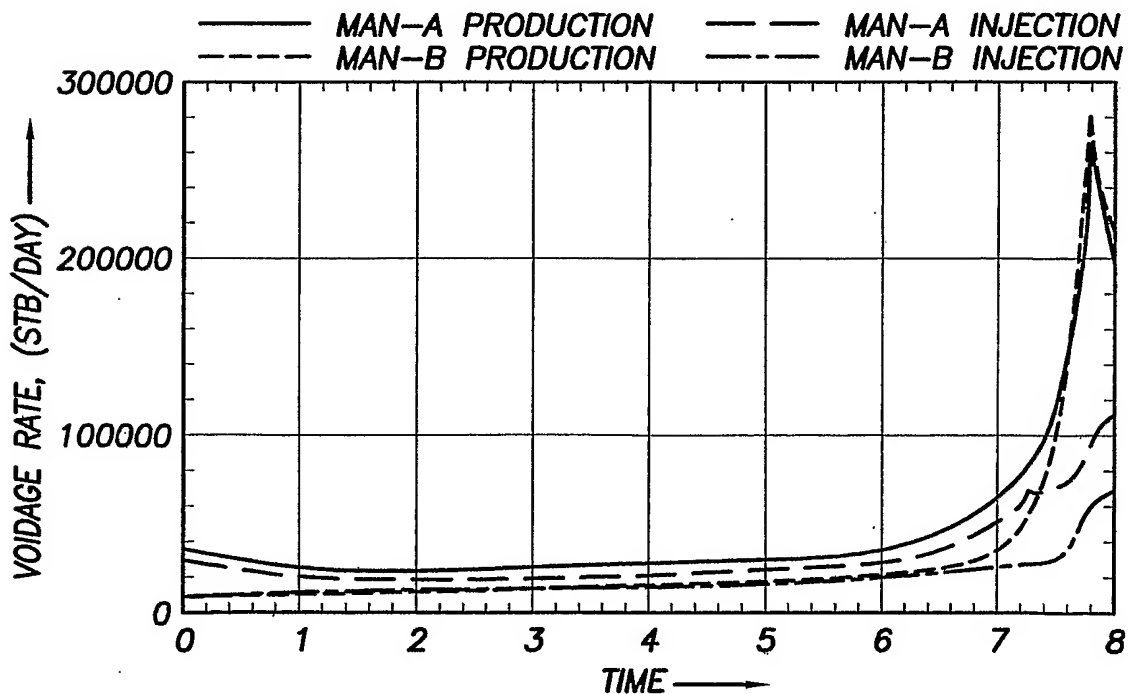
10/12



**FIG.13**—PRODUCED METHANE AND HC13 COMPOSITION VS. TIME; EXAMPLE II.

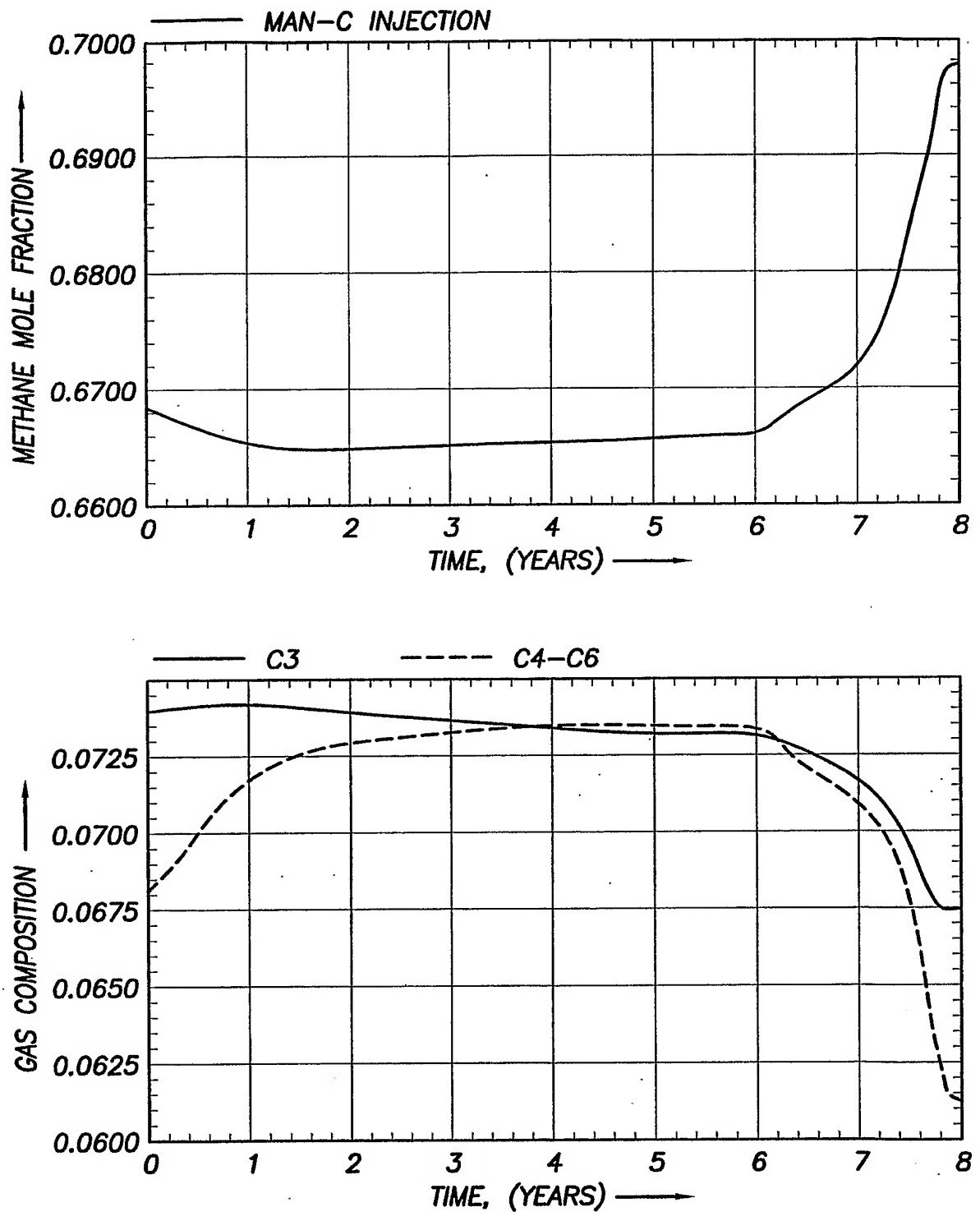


**FIG.15**—GATHER GAS PRODUCTION RATE AND MAN-C GAS INJECTION RATE VS. TIME; EXAMPLE II.



**FIG.16**—MAN-A AND MAN-B RESERVOIR VOLUME PRODUCTION RATE AND RESERVOIR VOLUME WATER INJECTION RATE VS. TIME; EXAMPLE II.

12/12



**FIG. 17**—INJECTED GAS COMPOSITION VS. TIME, MAN-C;  
EXAMPLE II.